Vehicle Battery Safety

HS03-009B (10-08)

A 5-Minute Safety Training Aid

Battery powered equipment is commonplace in industry today. However, batteries present hazards that can cause serious injury or death to workers. Batteries contain acid and can explode and/or catch on fire. In the event of a battery explosion or fire, acid and toxic fumes are released. When acid contacts the skin, extremely painful burns and scarring result. When these fumes are breathed, the lungs are burned from the toxic chemicals present in fumes. Blindness will likely result if this acid contacts the eye. These physical injuries are irreversible. Therefore, when working with batteries, it is important to prevent exposure by wearing personal protective equipment (PPE).When batteries are being charged, explosive gases are produced. Heat and sparks can ignite these gases causing a fire or explosion. All smoking, open flames, and spark producing items such as grinders, welders, or other electrical equipment, should be kept well clear of batteries. Surface leakage is a condition caused when dust mixes with spilled electrolyte on the battery, creating a low resistance path. This low resistance path can "short" the battery. A shorted battery creates heat that can potentially cause a fire. Batteries should be kept clean and free of excess dust to protect against shorting.

Maintenance Procedures

- Before performing any maintenance or repair on a battery, ventilate the battery compartment to dissipate any accumulations of gases. Batteries vent highly explosive gas (hydrogen) that can be easily ignited if proper procedures are not exercised.
- When a battery terminal becomes loose and can be twisted, ventilate the battery compartment for a few minutes prior to tightening any of the terminals.

Jump Starting Batteries

- Connect one end of the jumper lead (red) to the positive terminal of the dead battery and connect the other end to the positive terminal of the booster battery.

- Connect one end of the jumper lead to the negative terminal (black) of the booster battery; then connect the other end to the bare metal frame of the equipment being jump-started. Do this at a location away from the battery and its associated fumes.

- Once started, disconnect the jumper leads in the reverse order. First disconnect the jumper lead (black) from the metal frame; then disconnect the jumper lead (black) from the negative terminal of the booster battery. Second, disconnect the jumper lead (red) from the positive terminal of the booster battery, and then disconnect the jumper lead (red) from the positive terminal of the dead battery.

Installing or Removing Batteries Batteries

- Shut off all lights and other electrical loads prior to performing battery maintenance.
- Always disconnect the negative (black) terminal connector before connecting or removing the positive (red) terminal connector. If the wrench touches the grounded surface while tightening the positive terminal, no arc will occur. Similarly, when installing the negative terminal connector, no arc will occur since the equipment frame is common with the negative.

Charging Batteries

- Exercise care in connecting the battery charger to the battery. Connecting the wrong polarity (red/+ to black/-) may cause a short-circuit which could result in explosion of the battery. Connect red/+ to red/+ and black/- to black/- and always follow the charger's manufacturer's operating instructions.
- Ensure that the battery charging circuit is deenergized before making your connections. Once the connections are made, turn the charging circuit on.

Remember to practice safety. Don't learn it by accident.

References

29 CFR 1910.178 (g) – Changing and Charging Storage Batteries

Vermont SIRI Safety Library Page; *General Industrial Battery Safety*; May 20, 2002

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